



Embedded Edge Compute Module

Catalog Number 1756-CMEE1Y1



Allen-Bradley

by ROCKWELL AUTOMATION

User Manual

Original Instructions

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.



WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.



ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

These labels may also be on or inside the equipment to provide specific precautions.



SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.



BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.



ARC FLASH HAZARD: Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

The following icon may appear in the text of this document.



Identifies information that is useful and can help to make a process easier to do or easier to understand.

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About This Publication

This manual explains how to configure and use ControlLogix® Embedded Edge Compute modules.

Download Firmware, AOP, EDS, and Other Files

Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes from the Product Compatibility and Download Center at rok.auto/pcdc.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
ControlLogix Embedded Edge Compute Module Installation Instructions, publication 1756-IN091 .	Describes how to install the ControlLogix Embedded Edge Compute Module.
ControlLogix I/O Modules Specifications Technical Data, publication 1756-TD002 .	Provides specifications for the ControlLogix Embedded Edge Compute module.
FactoryTalk Optix Studio Help	Provides help on how to use FactoryTalk Optix Studio.
FactoryTalk Remote Access Help	Provides help on how to use FactoryTalk Remote Access.
EtherNet/IP Network Devices User Manual, ENET-UM006	Describes how to configure and use EtherNet/IP™ devices to communicate on the EtherNet/IP network.
Ethernet Reference Manual, publication ENET-RM002	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications .	Provides declarations of conformity, certificates, and other certification details.

Notes:

ControlLogix Embedded Edge Compute Module

The ControlLogix® Embedded Edge Compute module is a chassis-based module that can communicate directly with Logix controllers, and has read and write access to all controller tags through the backplane and front Ethernet port.

The Embedded Edge Compute module enables FactoryTalk® Optix Studio™, a development platform for creating human machine interface (HMI) and Internet of Things (IoT) applications.

The Embedded Edge Compute module contains a FactoryTalk® Optix™ XS runtime license with five tokens, and a FactoryTalk® Remote Access™ Runtime Pro license.

Catalog Number Explanation

The ControlLogix Compute Embedded Edge module catalog number indicates specific information about the module. The module uses the format **1756-CMEExyz**, where the following apply:

- 1756 is the Bulletin number.
- CMEE = Embedded Edge Compute Module
- x represents the microSD™ card capacity
- y represents the embedded OS that is installed on the module
- z represents the application that is shipped on the module

ControlLogix Embedded Edge Compute Module Catalog Number (1756-CMEE1Y1)

Variable	Attribute	Possible Value
x	microSD card capacity	1 = 32 GB
y	Operating system	Y = Embedded Yocto Linux OS 64-bit
z	Application that is shipped on the module	1 = No application

Minimum Requirements

The module has these minimum requirements:

- ControlLogix Chassis, Series C (Series B chassis function within a derated temperature range)
- ControlLogix Chassis Power Supply
- FactoryTalk Optix Studio version 1.20 or later
- If you want to use the Studio 5000 Logix Designer® application to configure the module, you need:
 - A ControlLogix 5570 or 5580 controller with firmware revision 28.011 or later.
 - Studio 5000 Logix Designer version 28.00.00 or later.
 - Add-on Profile for 1756 Embedded Edge Compute version 40.00.45 or later

Module Components

This table describes the components available on the Embedded Edge Compute module.

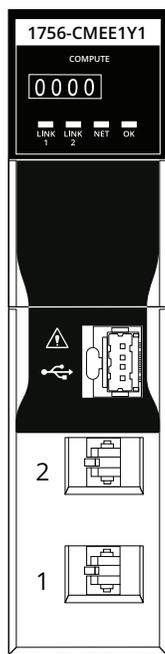
Embedded Edge Compute Module Components

Component	Description
Linux Yocto 64-bit embedded OS	Embedded operating system.
Onboard memory	4 GB - RAM
eMMC memory	20 GB - Mass storage
Four-character display	Scrolls information about the module.
Status indicators	Shows information about the module status and health.
Reset button	Used with the embedded OS to restart the module.
Factory Restore button	The factory restore button: <ul style="list-style-type: none"> Resets all settings. Restores the operating system and module firmware Removes the FactoryTalk Remote Access identity.
USB 3.0 port	Connect USB peripherals.
Two 1 Gb Ethernet ports	Used with the Ethernet protocol.
Rotary switches	Not functional currently.
microSD Card (1784-MSDHC32)	<ul style="list-style-type: none"> 32 GB One microSD card is included in the product and is considered a part of the product. Declared data retention and Factory Reset times are valid only when using the microSD card included in the product. Rockwell Automation recommends you only replace the microSD card if it fails. Replacing the microSD card for any other reason is not recommended, and is taken at your own risk.

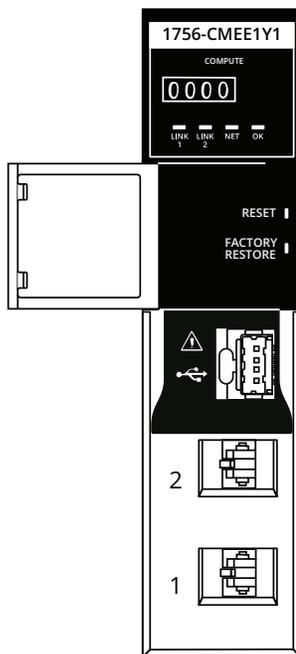
This figure shows the components that are visible on the module.

ControlLogix Embedded Edge Compute Module Components

Front View With Door Closed

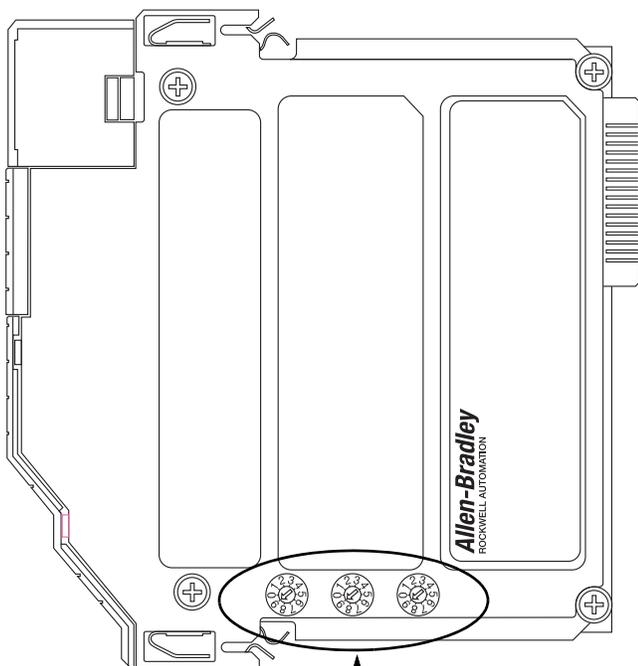


Front View With Door Open



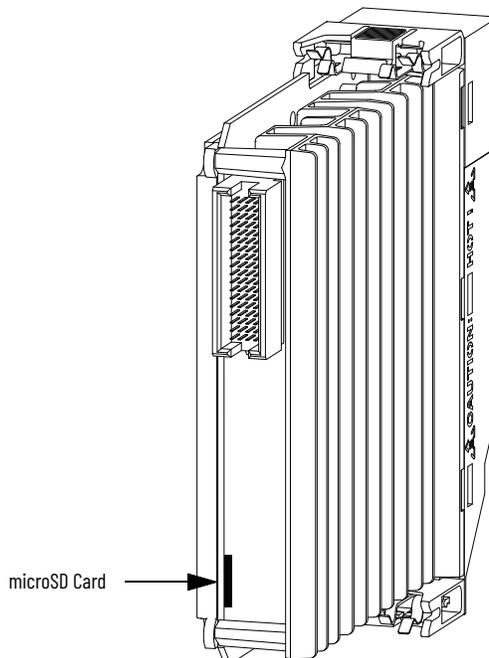
- ← Four-character Display
- ← Status Indicators
- ← Reset Button
- ← Factory Restore Button
- ← USB 3.0 Port
- ← Ethernet ports 1 and 2
 - The top port is eth2, and the bottom port is eth1.

Side View



Rotary Switches

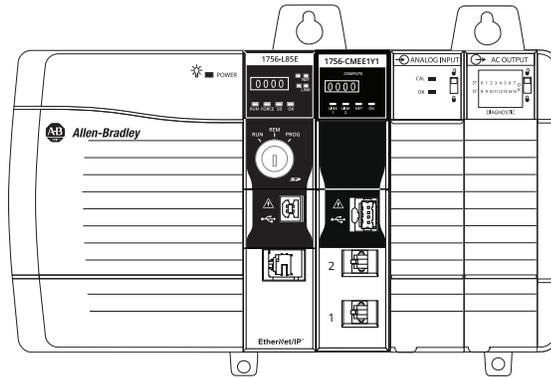
Back View



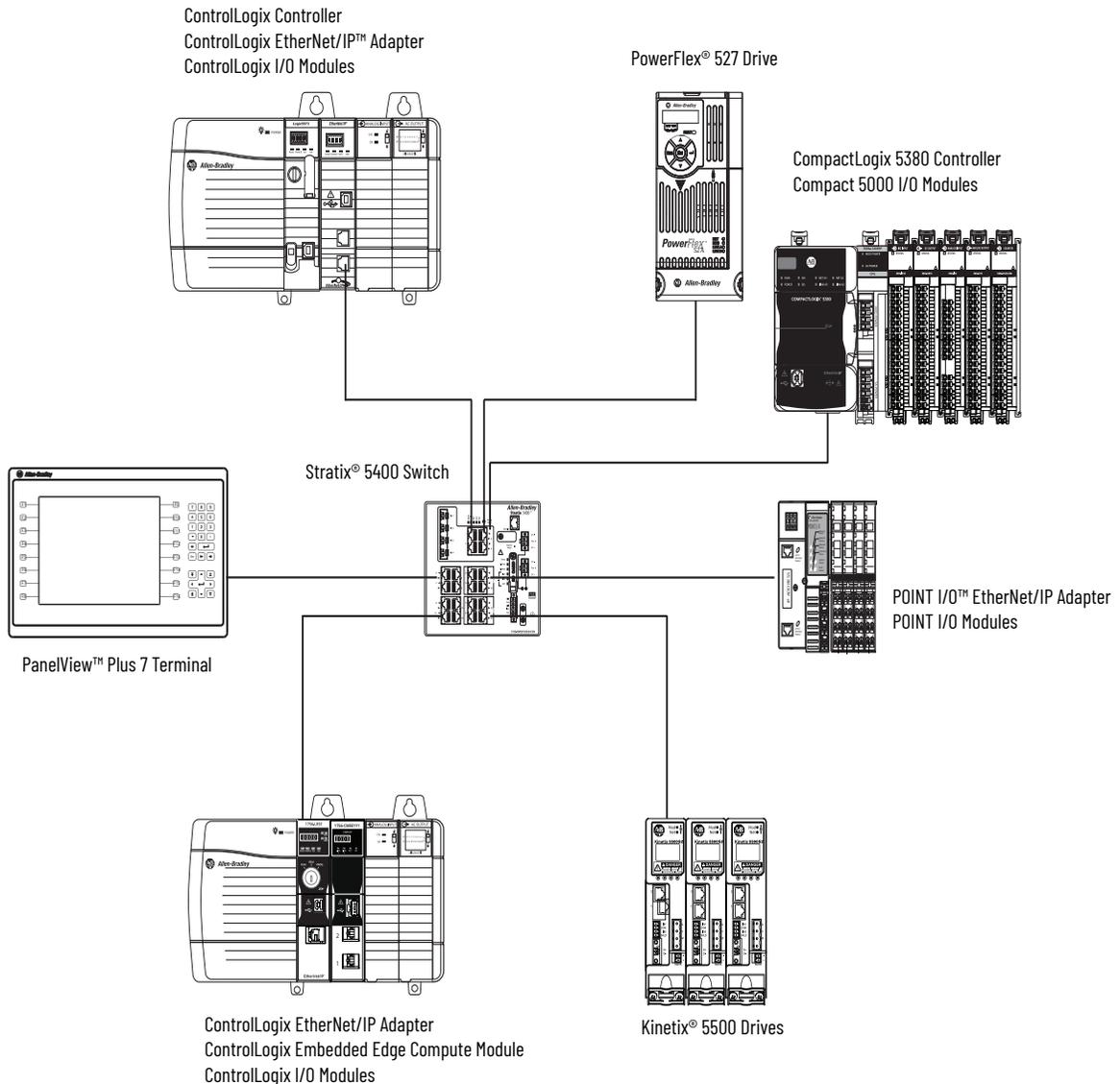
Module Location

The module can reside locally in the same chassis as the controller or in a chassis that is remote from the controller with which it communicates.

Local Chassis - ControlLogix 5580 System with Embedded Edge Compute Module



Control Application with Embedded Edge Compute Module in Remote Chassis

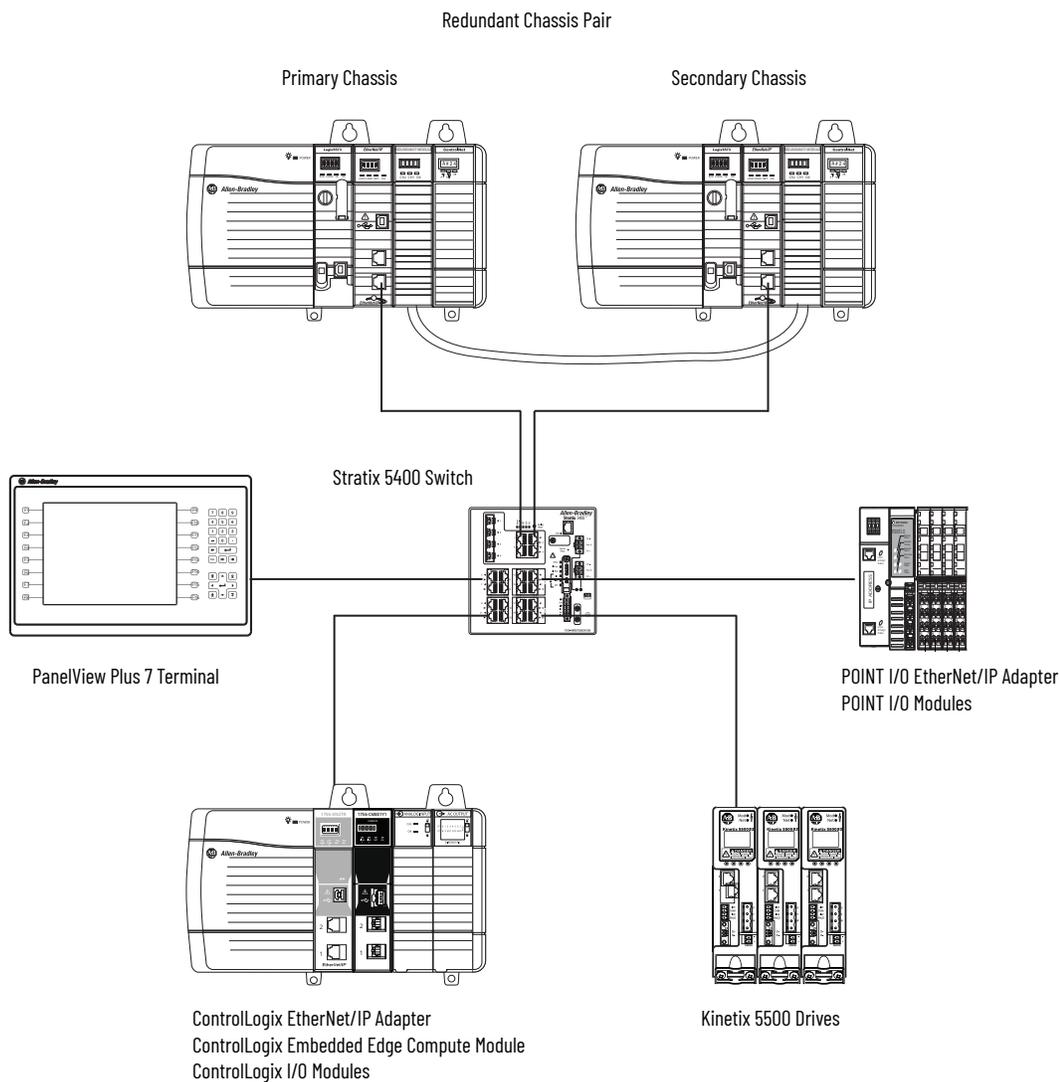


Embedded Edge Compute Module in a Redundancy System

You can use the module in a ControlLogix redundancy system, but the module must reside in a remote chassis. The module communicates with the ControlLogix controller over an EtherNet/IP™ network.

IMPORTANT The module cannot reside in the primary or secondary chassis.

ControlLogix Redundancy System with Embedded Edge Compute Module in Remote Chassis



Status Indicators

The module uses a 4-character display and status indicators to show the module state at any point in time.

Indicator	State	Description
LINK 1 LINK 2	Off	No activity. One of these conditions exists: <ul style="list-style-type: none"> The device is not connected to a network. The port is administratively disabled.
	Steady green	The device is connected to a network but is not actively communicating.
	Flashing green	The device is actively communicating on a network.
NET	Off	One of these conditions exists: <ul style="list-style-type: none"> The module is not powered. <ul style="list-style-type: none"> Verify that there is chassis power. Verify that the module is completely inserted into the chassis and backplane. Make sure that the module has been configured. The module is powered but does not have an IP address. Assign an IP address to the module. The port is administratively disabled.
	Flashing green	The module has an IP address, but no active connections are established.
	Steady green	The module has an IP address and at least one established active connection.
	Steady red	Duplicate IP address or invalid configuration.
	Flashing Green/Red	The module is performing its power-up testing.
OK	Off	No power is applied to the module.
	Flashing red	One of the following is true: <ul style="list-style-type: none"> The device has a recoverable fault. The device firmware is being updated. Factory reset is in progress.
	Steady red	One of the following is true: <ul style="list-style-type: none"> The module is powered, but is inoperable. The module has a major nonrecoverable fault.
	Flashing green	The module is booting.
	Steady green	The module is operating normally and the boot phase is completed.

Connection Options

The module has USB and Ethernet ports.

USB 3.0 Port

You use the USB port to connect peripherals to the module. The USB port supports the use of a USB hub. FAT32 and exFAT file systems are supported.



WARNING: If you connect or disconnect the USB cable with power applied to this module or any device on the USB network, an electric arc can occur. This can cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.



We recommend that you connect any peripherals to the USB port before you power up the module.

IMPORTANT

When fully inserted, the USB connectors lock into the USB port. Before you remove a USB connector, press the silver release tab on the left side of the USB port.

Ethernet Ports

There are two Ethernet ports on the module.

Embedded Edge Compute Module Default Ethernet Port Configuration⁽¹⁾

Port Position on Module	Module Properties Port Default Name	System Manager Port Default Name	Default IP Address
Top Port	Port 2 (LAN) ⁽²⁾	Eth2	192.168.0.1
Bottom Port	Port 1 (WAN)	Eth1	Assigned by DHCP

(1) Device Level Ring topologies are not supported.

(2) FactoryTalk Optix RA EtherNet/IP driver only supports Port 2.



WARNING: If you connect or disconnect an Ethernet cable with power applied to this module or any device on the network, an electric arc can occur. This can cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Port 2

The FactoryTalk® Optix™ RA EtherNet/IP driver only supports Port 2. Only Port 2 can be used for EtherNet/IP communication. This Ethernet port can communicate on an EtherNet/IP network at a maximum network communication speed of 1 Gbps.

You can configure this port either with the Module Properties dialog in the Studio 5000 Logix Designer application, or with System Manager.

- To configure with the Module Properties Dialog, see [Internet Protocol on page 21](#).
- To configure with System Manager, see [Interfaces on page 33](#).

Port 1

Port 1 can support enterprise-wide Ethernet communication. This Ethernet port can communicate on an Ethernet network at a maximum network communication speed of 1 Gbps.

You can only configure this port with System Manger. See [Interfaces on page 33](#).

Considerations

- You can use any IP address and mask values in your application.
- You can configure the IP address and mask to be static or dynamic.
 - If an IP address and mask are static, they remain assigned to the port after power is cycled to the module.
 - If an IP address and mask are dynamic, they are cleared from the port each time power is cycled to the module. A DHCP server must reassign values. Remember, the IP address and mask values that are assigned after a power cycle can differ from the ones that were used before a power cycle.

We recommend that you set the IP addresses to be static.

Other Communication Drivers

All other communication drivers in FactoryTalk Optix can run on both Port 1 and Port 2:

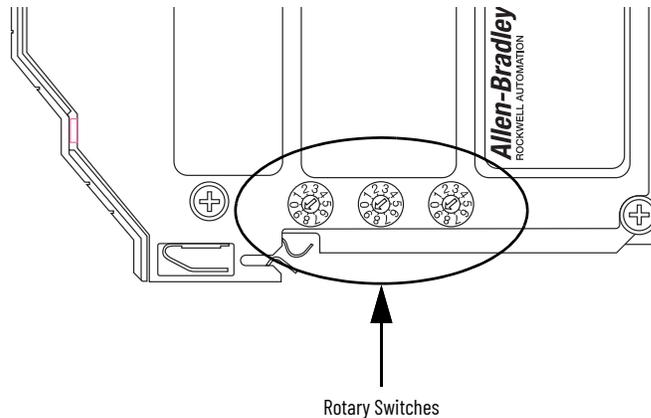
- Modbus
- MELSEC FX3U
- MELSEC Q
- S7TCP
- S7 TIA PROFINET
- OMRON EtherNet/IP
- OMRON FINS
- CODESYS
- TwinCAT
- SerialPort

For more information, see Communication Drivers Overview in the FactoryTalk Optix Studio Help.

Rotary Switches

There are rotary switches on the side of the module. Out-of-the-box, the switches are set to 000 and are planned for future use.

Embedded Edge Compute Module Rotary Switches



Reset Button

Embedded Edge Compute modules have a reset button behind the door that powers off and reboots the device.



WARNING: When you press the reset button while power is on, an electric arc can occur. This can cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

An example of when you would use the reset button include:

- To restart the embedded OS after a module crash.

Use a tool with a small head, for example, a small screwdriver, to press the reset button when the module is powered.

Factory Restore Button

Embedded Edge Compute modules have a factory restore button behind the door. The factory restore button:

- Resets all settings.
- Restores the operating system and module firmware
- Removes the FactoryTalk Remote Access identity.



WARNING: When you press the factory restore button while power is on, an electric arc can occur. This can cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Use a tool with a small head, for example, a small screwdriver, to press the factory restore button when the module is powered on.

IMPORTANT Before proceeding, make sure to back up any important data stored on the device. This procedure erases all user settings, configurations, and data like the FactoryTalk Optix application and the related FactoryTalk Optix runtime.

IMPORTANT The Factory Restore procedure takes about 20 minutes due to low-level format of the user memory, including both the eMMC and the microSD card. This procedure makes sure that the device is restored to factory default settings, and all sensitive data is permanently and securely erased from the device.

To restore your device to its factory defaults, follow these steps:

1. Power Off the device.
2. Power On the device while pressing and holding the Factory Restore button.

The OK status indicator flashes red and the countdown: "4 3 2 1 FACTORY RESET IN PROGRESS" scrolls across the 4-character display.

3. Release the Factory Restore button.

Depending on the result of the Factory Reset:

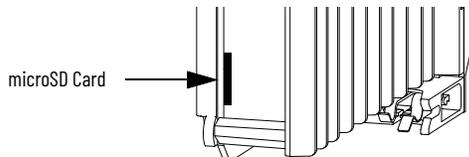
- Factory Reset failure: the OK status indicator is steady red and the error message "FACTORY RESET FAILED" scrolls across the 4-character display.
- Factory Reset OK: the OK status indicator is steady green, "FACTORY RESET OK" scrolls across the 4-character display, and then the module reboots.

Replace the microSD Card

If the microSD card fails, you can order a replacement 1784-MSDHC32 microSD card.

To replace the microSD card:

1. Remove power from the module.
2. Remove the module from the chassis.
3. On the rear of the module, remove the failed microSD card.



4. Insert the new microSD card.
5. Inset the module in the chassis.
6. Apply power to the module.

Update the Module Via USB

The firmware image contains the module firmware, Yocto Linux OS, FactoryTalk Optix runtime application, and the FactoryTalk Remote Access runtime application. Firmware images are available on the Product Compatibility and Download Center ([PCDC](#)), and identified by the extension .img.

You can also update the module remotely through FactoryTalk Remote Access. See [Update the Module With FactoryTalk Remote Access on page 40](#).



Firmware update by USB is supported only via USB Memory device with FAT32 and exFAT file systems. microSD Cards are not supported for firmware updates.

IMPORTANT

The process takes approximately 2 minutes to complete. During this time, it is important NOT to turn off the device or remove power.

To update the module:

1. Copy the file to the root folder of an empty USB Memory device.
2. Insert the USB Memory device into the USB port on the module.
3. Cycle power to the module.

The module detects the USB Memory device with the firmware image file, checks if it is valid, and starts the update procedure. The OK status indicator stays steady green, and the UPDATE IN PROGRESS message scrolls across the 4-character display.

4. After the update, the device reboots.
5. After reboot, the OK status indicator flashes green.
6. Once the OK status indicator is steady green, the update is complete.

FactoryTalk Optix Applications

FactoryTalk Optix Studio is available as a web and a desktop development environment that you use to build FactoryTalk Optix Applications and deploy them to client systems. You can access the FactoryTalk Optix Studio web version through FactoryTalk® Hub™.

FactoryTalk Optix Studio provides a communication path to REST API, OPC UA, and MQTT to meet the needs of various applications.

Example FactoryTalk Optix applications for the Embedded Edge Compute module include:

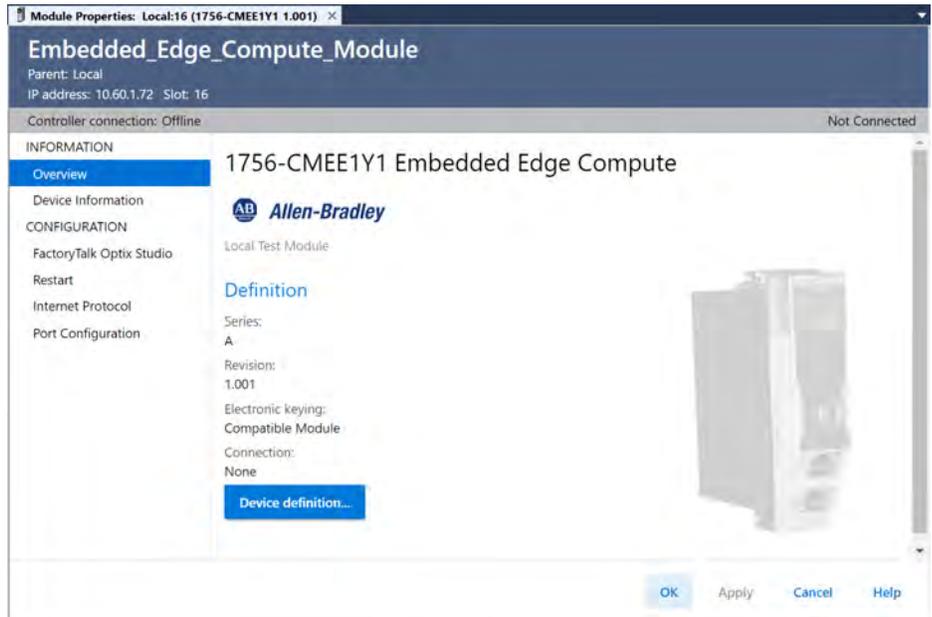
- HTML5 web-based HMI/dashboarding applications that run on the Embedded Edge Compute module and are visualized on web panels or web clients.
- OPC UA client/server applications.
- MQTT publisher/subscriber applications with any broker, supporting TLS and any JSON encoding. This enables you to develop cloud gateway applications.
- Data collection and visualization applications.
- All features that are provided by FactoryTalk Optix can be extended and customized through the FactoryTalk Optix C# API to address scenarios like recipe managers, alarm handling, etc.

For information on how to use FactoryTalk Optix Studio to develop and deploy applications, see the FactoryTalk Optix Studio Help. The help has a number of application examples and tutorials.

Configure the Module with Studio 5000 Logix Designer

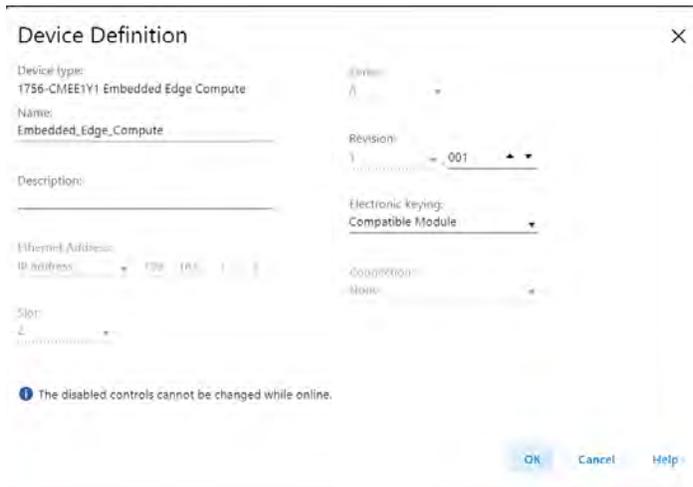
Overview

This chapter describes how to configure the Embedded Edge Compute module with Studio 5000 Logix Designer®. You can also use [System Manager](#) to configure the module and update the module firmware.



Device Definition

When you first create the module, the software automatically launches the Device Definition window since the Name and IP Address of the module is the minimal configuration that is needed to create the module. To change the Device Definition later, you will need to launch Device Definition from the Overview page.



Parameter	Description
Device type	Displays the device catalog number and type.
Name	Displays a user-defined name for the module.
Description	Displays the user-defined device description.
Ethernet address	Displays the IP address that is assigned to the module.
Slot	Displays the slot in the chassis that the module resides in.
Series	Displays the module series.
Revision	Displays the module major and minor revisions.
Electronic keying	Displays the electronic keying that is used for the module. Electronic keying compares the module that is defined in the project to the installed module. If keying fails, a fault occurs. Valid values include: <ul style="list-style-type: none"> Exact Match Compatible Module Disable Keying For detailed information on Electronic keying, see Electronic Keying in Logix 5000® Control Systems Application Technique, publication LOGIX-AT001 .
Connection	None

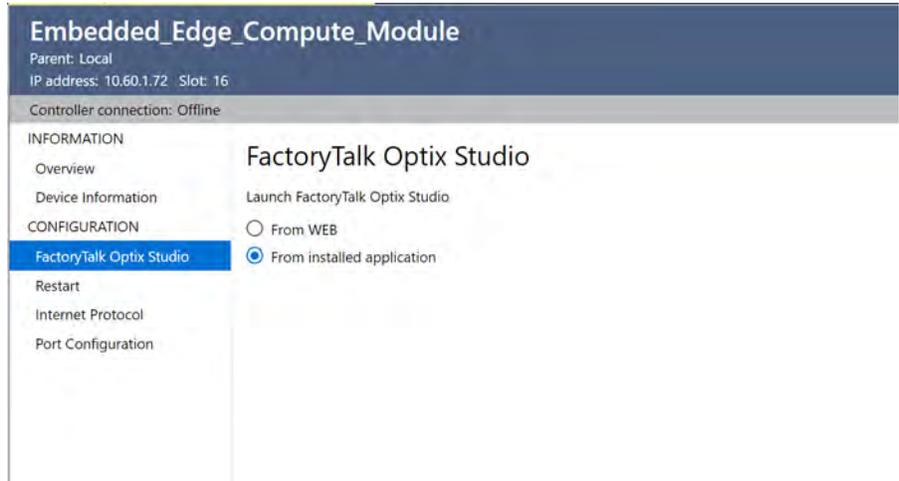
Device Information

Use the Device Information view to view device and status information when the device is online.

Parameter	Description
Identification	Displays information that identifies the module.
Status - Major/Minor fault	Displays whether there is a major and minor fault.
Status - Internal State	Displays the module's current operational state. <ul style="list-style-type: none"> • Self-test • Flash update • Communication fault • Unconnected • Flash configuration bad • Major fault • Run mode • Program mode • (16#xxxx) unknown
Status - Configured	Displays Yes or No indicating whether the module was configured by the owner controller connected to it. Once a module is configured, it stays configured until the module is reset or power is cycled, even if the owner drops connection to the device.
Status - Owned	Displays Yes or No indicating whether an owner controller is connected to the device.
Status - Device identity	Displays whether the physical device matches or mismatches with the configuration in the Overview view. <ul style="list-style-type: none"> • Match - The physical device agrees with what is specified in the Overview view, and all of these must agree: <ul style="list-style-type: none"> - Vendor - Device type (the combination of Product type and Product code for a particular Vendor) - Major revision • Mismatch - If the physical device does not agree with what is specified in the Overview view.
Status - Protection mode	Displays the device protection when online. The protection mode depends on the device and may include: <ul style="list-style-type: none"> • Explicit • Implicit • None Tip: When the device is offline or if a communication failure to the device occurs, the field is blank.
Refresh	Retrieves and displays the latest values from the device.

FactoryTalk Optix Studio

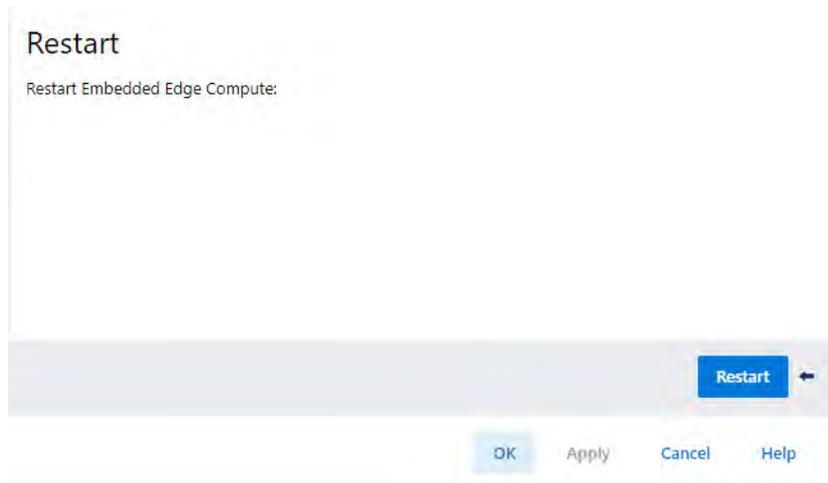
You can use the FactoryTalk® Optix Studio™ software to configure and program the application for the Edge Compute module. FactoryTalk Optix Studio can be installed as a desktop application or run in the cloud within a web browser.



Parameter	Description
From WEB	Opens FactoryTalk Optix Studio software from the cloud in a web browser.
From installed application	Opens FactoryTalk Optix Studio software from the application that is installed on your computer. You can only launch the desktop application is only enabled when the software is installed on the local machine.

Restart

Select Restart to restart the device. A prompt appears asking if you want to restart the device. If the project is offline, no online data is shown.

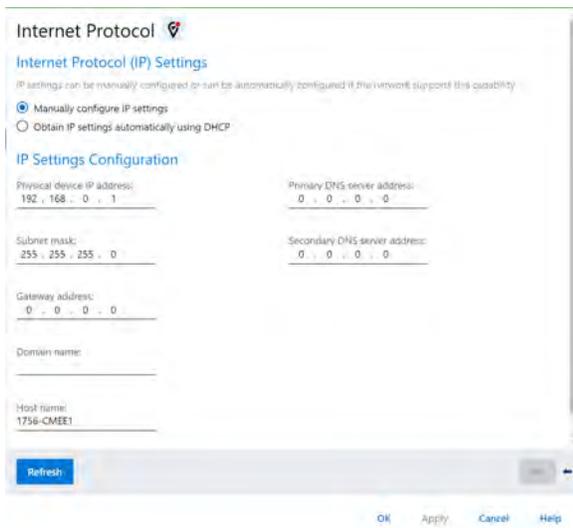


Button	Description
Restart	Restarts the operating system on the module. This powers off and reboots the module.

Internet Protocol

Use Internet Protocol to configure the IP settings of Port 2. The configured values display only when the module is online. Use Internet Protocol to:

- Specify whether to manually configure IP settings or obtain the IP setting automatically using DHCP.
- Configure the Physical device IP address, Subnet mask, Gateway address, Primary DNS server address, Secondary DNS server address, Domain name, and Host name.



Parameter	Description
Internet Protocol Settings	The device's IP settings configuration mode.
Physical device IP Address	Address used by the IP protocol to route information to and from the device.
Subnet mask	An extension of the IP address scheme that lets a site use one net ID for multiple physical networks.
Gateway address	Address used to connect individual physical networks into a system of networks
Primary DNS server address	IP address for the primary DNS server that holds the master copy of the data.
Secondary DNS server address	IP address for the secondary DNS server that holds a copy of the data in case the primary DNS is unavailable.
Domain name	A name that is associated with a physical IP address on the Internet.
Host name	Unique identification string for the device.
Refresh	Retrieves and displays the latest device information.
Set	Writes pending edits to the device.

IP Mismatch

	The Internet Protocol view displays this icon next to the Internet Protocol title if there is an IP address mismatch.
--	---

Select the icon to open the IP Mismatch Dialog:



Port Configuration

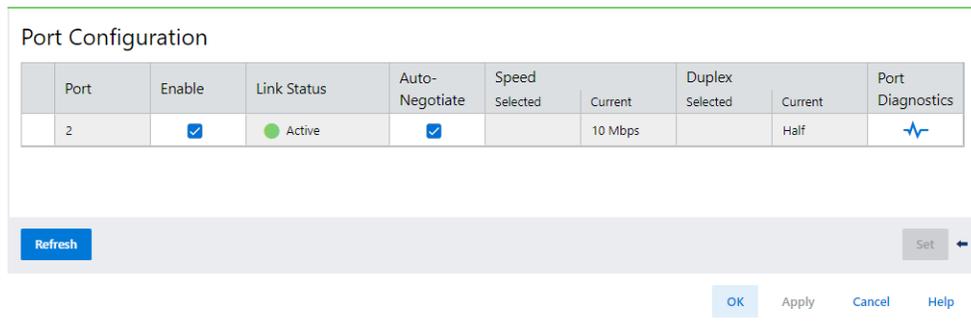
Use the Port Configuration view to configure the port settings for non-controller devices.

- You must be online and communicating with the device.
- Ensure that a connection interruption at this time is acceptable.

IMPORTANT Configuring the port settings requires data to be written to the device, which interrupts the connection to the device and to any other device that is connected through it. Connections from other controllers can be interrupted as well. You must not interrupt the connection on a device that is currently being used for control.

To configure the port settings:

1. In the Port Configuration view, configure the settings as needed.
2. Select Set to write the changes to the device.



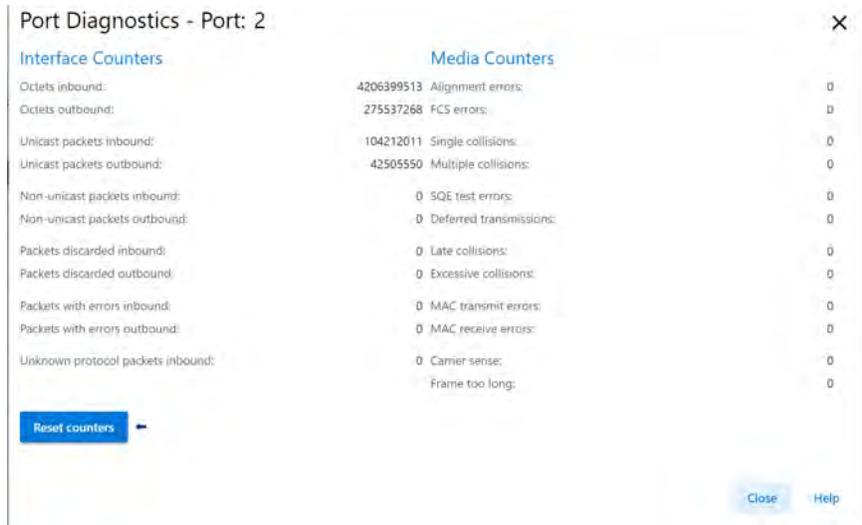
Parameter	Description
Enable	Enable or Disable Port 2.
Link Status	Displays the status of the port communication on the network.
Auto-Negotiate	Indicates that the device automatically selects the best method for communication. If cleared, the port speed and duplex must be set manually.
Speed - Selected	Specifies the configured port speed for sending and receiving data. Available options are device-dependent. Tip: Selected Speed is unavailable if Auto-Negotiate is selected.
Speed - Current	Displays the actual speed at which the port is sending and receiving data.
Duplex - Selected	Specifies the configured port duplex setting: <ul style="list-style-type: none"> • Half - Indicates sending and receiving data in one direction at a time. • Full - Indicates sending and receiving data in both directions simultaneously. Tip: Selected Duplex is unavailable if Auto-Negotiate is selected.
Duplex - Current	Displays the actual duplex method that the port is using to send and receive data.
Port Diagnostics	Opens Port Diagnostics to view the interface and media counters for the port.
Set	Writes pending edits to the device.
Reset	Initiates a reset operation on the device, which returns the device to its power-up state by emulating the cycling of power and causes the changes that are made to become the port's current settings.

Port Diagnostics

Use Port Diagnostics to view diagnostic information for a port.

1. To view diagnostics information for a port
2. On the tab for the device, select Port Configuration.
3. In the Port Diagnostics column for the port, select .

In Port Diagnostics, view the diagnostics information as needed.



Parameter	Description
Interface Counters	<p>Values only appear when the device is online.</p> <ul style="list-style-type: none"> • Octets Inbound: Number of octets received on the interface. • Octets Outbound: Number of octets transmitted on the interface. • Unicast Packets Inbound: Number of unicast packets received on the interface. • Unicast Packets Outbound: Number of unicast packets transmitted on the interface. • Non-unicast Packets Inbound: Number of non-unicast packets received on the interface. • Non-unicast Packets Outbound: Number of non-unicast packets transmitted on the interface. • Packets Discarded Inbound: Number of inbound packets that are received on the interface but discarded. • Packets Discarded Outbound: Number of outbound packets that are transmitted on the interface but discarded. • Packets With Errors Inbound: Number of inbound packets that contain errors (excludes discarded inbound packets). • Packets With Errors Outbound: Number of outbound packets that contain errors (excludes discarded outbound packets). • Unknown Protocol Packets Inbound: Number of inbound packets with unknown protocol.
Media Counters	<p>Values only appear when the device is online.</p> <ul style="list-style-type: none"> • Alignment Errors: Number of frames received that are not an integral number of octets in length. • FCS Errors: Number of frames received that do not pass the FCS check. • Single Collisions: Number of successfully transmitted frames that experienced exactly one collision. • Multiple Collisions: Number of successfully transmitted frames that experienced multiple collisions. • SQE Test Errors: Number of times an SQE test error message was generated. • Deferred Transmissions: Number of frames for which the first transmission attempt is delayed because the medium is busy. • Late Collisions: Number of times a collision is detected later than 512 bit-times into the transmission of a packet. • Excessive Collisions: Number of frames for which transmission fails due to excessive collisions. • MAC Transmit Errors: Number of frames for which transmission fails due to an internal MAC sub layer transmit error. • MAC Receive Errors: Number of frames for which reception on an interface fails due to an internal MAC sub layer receive error. • Carrier Sense: Number of times that the carrier sense condition was lost or never asserted when attempting to transmit a frame. • Frame Too Long: Number of frames received that exceed the maximum permitted frame size.
Reset Counters	<p>Sets the interface and media counter values on the device to zero and updates the values that are displayed in the dialog box with the current counter values. Reset Counters is only enabled when the device is online.</p>

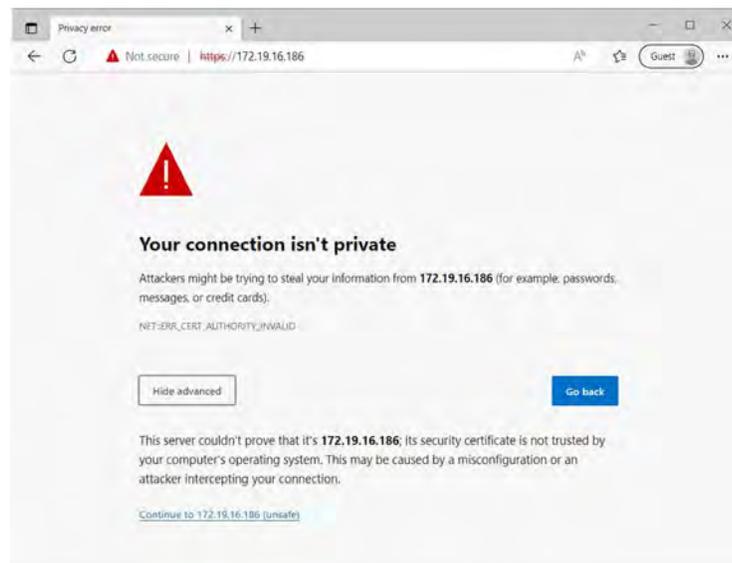
Notes:

System Manager

You can use System Manager to configure the module and update the module firmware.

You can access System Manager remotely via Ethernet connection, by typing the IP address of the Embedded Edge Compute Module into a web browser window.

When you remotely access System Manager via a web browser, you could be warned that the connection is not private and the security certificate is not trusted. In this case, select the Advanced option and proceed.



Device configuration access is protected with a combination of username and password:

- The default **username** is **admin**.
- The default **password** is **admin**.

When you first access System Manager, you are prompted to change the password. After the password changes, a restart will be required. With the next sign-on, you can access with the Admin username and password, or with the User account (if activated by the Admin).



The admin account allows to access the System Manager interface and is also the one to be used to transfer the FactoryTalk® Optix™ application via FactoryTalk® Optix Studio™.

IMPORTANT

Creating a strong and secure password can reduce the risk of cybercriminals guessing your password and accessing sensitive data. For this reason, the password must meet the following criteria:

- be at least 8 characters long.
- meet at least 3 of the following requirements: at least one uppercase character, at least one lowercase character, at least one numeric character, at least a symbolic character.

Given that a strong password makes the amount of time it takes to guess it exponentially longer, it is highly recommended the use of pass phrases longer than 8 characters.

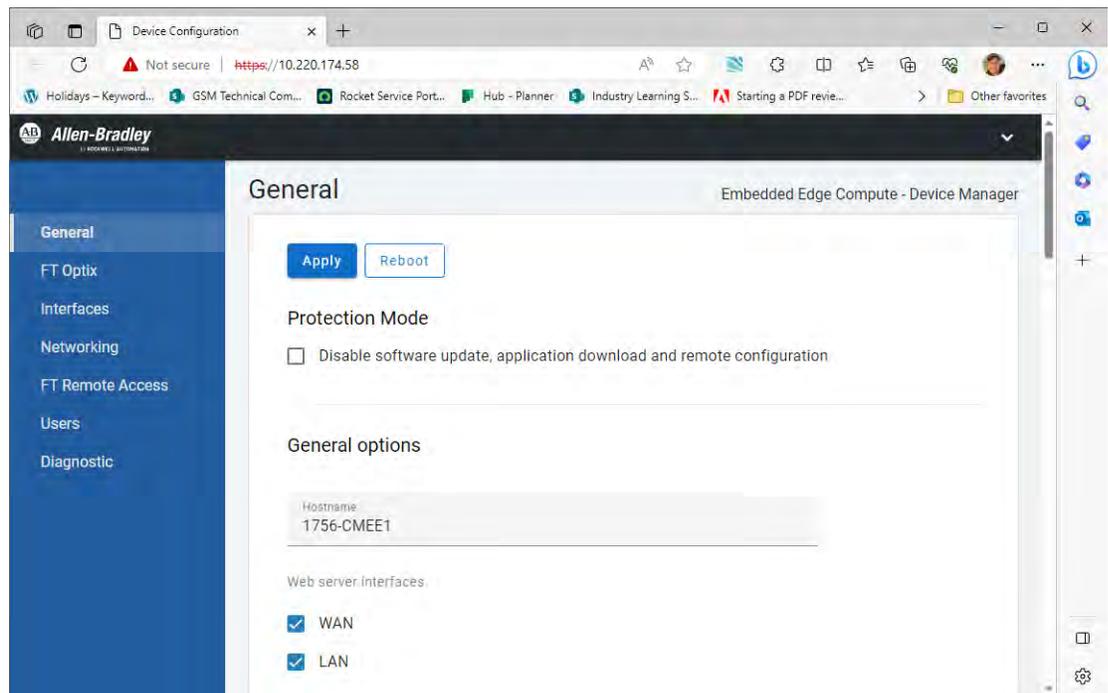


ATTENTION: Take note of the new password! Admin account is required to transfer the FactoryTalk Optix application via FactoryTalk Optix Studio. If you lose the password, you must restore the module to Factory Defaults, which deletes the FactoryTalk Optix application and system updates.

System Manager Interface

The System Manager interface is divided into the following sections:

- General
- FactoryTalk Optix
- Interfaces
- NetworkingS
- FactoryTalk Remote Access
- Users
- Diagnostic



Apply the configuration to the device

To apply changes to the device, it is enough to click the “Apply” button. A message will confirm the success of the operation. Depending on the options changed, the device will need to be restarted.

General

Protection mode

Protection Mode

- Disable software update, application download and remote configuration

When Protection Mode is enabled on your device, the security of the device is enhanced by disabling software updates, application downloads, and remote configurations. In this state, the device rejects the following actions:

- Interface updates: TCP/IP configuration (configuration method, network address, hostname), Ethernet Link configuration (link enable, speed, and duplex) and remote configuration requests via CIP™.
- Firmware updates via USB or remotely through FactoryTalk® Remote Access™.
- FactoryTalk Optix application updates.

The device accepts settings and reboot requests through the System Manager web interface, FactoryTalk Optix System Tags, and FactoryTalk Remote Access tools, which all require user authentication. This helps to make sure that changes are only made by authorized administrators.

IMPORTANT

Protection Mode is disabled by default for all out-of-the-box products and after a factory reset. To reduce the surface of cyberattacks is highly recommended to enable this option in a production environment, to help unauthorized changes and potential security risks.

General options

General options

Hostname
1756-CMEE1

Web server interfaces

WAN

LAN

Hostname

The Hostname is a unique identifier that is assigned to the device. It is used to identify and communicate with the device over the network and can be used to configure or troubleshoot the device as needed. This name is the device name visualized on the FactoryTalk Remote Access organization.

Web server interfaces

- WAN— Enable this option to allow access to the System Manager through the device's WAN port (Port 1). This makes it easy for you to remotely manage and configure the device via the web interface.
- LAN—Enable this option to use the System Manager through the device's LAN port (Port 2). This allows you to access the web interface for device management and configuration via the local network.



It is recommended to configure the options above to let the web server be only accessible from the strictly needed interfaces, to reduce surface exposure to cyberattacks. Ideally, it should be only enabled when the configuration must be changed.

Date and time

Time synchronization mode

This combo box enables you to configure your device's date and time settings.

- *Auto (PLC)* synchronizes the date and time automatically with a ControlLogix® controller.
- *Auto (Remote NTP server)* synchronizes the date and time automatically with a remote Network Time Protocol (NTP) server.



The device can be configured to automatically adjust the date and time from a remote NTP server and provide the same service to connected devices (local NTP server).

Auto PLC

Visible only when the Time synchronization mode is Auto (PLC), allowing to set the slot number of the ControlLogix Controller with this syntax:

Backplane\slot number

For example, if the Logix Controller is at slot 0: Backplane\0

Date and time

Remote NTP Server

Visible only when the Time synchronization mode is Auto (Remote NTP server), allowing to set the IP address of the NTP server.

Date/Time/Time Zone

Displays the synchronized date and time.

Date

Year 1978	Month 9	Day 10
--------------	------------	-----------

Time

Hour 15	Minute 45
------------	--------------

Time zone

Sets the time zone.

Time zone
(UTC+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna

Local NTP server interfaces

The Local NTP server interfaces checkboxes activate the local NTP server on the specified interface (WAN and/or LAN), maintaining accurate timekeeping across your network. Selecting at least one interface enables the local NTP server to listen for connections on the standard UDP port 123. Selecting no interface disables the local NTP Server.

Local NTP server interfaces ⓘ

WAN

LAN

External Storage Devices

The device allows the use of USB Memory or microSD cards as storage devices.

External Storage Devices

USB Enabled

Micro SD Enabled

Maintenance

[Format Micro SD as EXT4](#)

While USB Memory is used as temporary storage (file transfers, logs, system updates), microSD cards can be used as permanent storage.

For these reasons, different file systems are supported:

Storage type	File system supported	Usage
USB Memory	FAT32	Suggested if used as temporary storage
microSD Card	FAT32	
	EXT4 (supported on Linux OS)	Suggested if used as permanent storage

To access external storage devices through a FactoryTalk Optix Application, use the system path shown in the following table:

Storage type	Folder
USB Memory	/storage/usb1
	/storage/usb2
	/storage/usb3
	... is accessed with progressive numbers
microSD Card	/storage/sd1

Format microSD as EXT4

EXT4 is natively supported on Linux OS.

System information

This section shows essential details about your device, such as the Product Name, the Firmware version, the OS version, the System Manager version, and the FactoryTalk® Remote Access™ Runtime version. This information is useful for troubleshooting and maintenance.



Note that both OS version and System manager version are dependent on the Firmware version.



Legal notices

The Legal Notices section of the device manual has two types of licenses: Main Licenses for commercial software and Open-Source Licenses for open-source software.

Legal notices

[Main licenses](#)

[Open source licenses](#)

FactoryTalk Optix

Options for FactoryTalk Optix Runtime and its entitlements.

Configuration

Configuration

- Run FT Optix Application Update Service at system startup
- Load only password protected applications

Run FactoryTalk Optix Update Service at system startup

When this setting is enabled, the FactoryTalk Optix update server activates at device startup, allowing the download and update of FactoryTalk Optix applications using FactoryTalk Optix Studio. If not enabled, downloading and updating FactoryTalk Optix applications on the device is not possible.

Load only password protected applications

In FactoryTalk Optix Studio, you can configure a password policy for users of the application at runtime. When *Load only password protected applications* is enabled, FactoryTalk Optix only loads applications that are password protected.

Application



Application name

This section displays the name of the project that has been loaded onto the device.

FactoryTalk Optix Runtime version

This section displays the version of the FactoryTalk Optix Studio Runtime that was used to develop the loaded project. The FactoryTalk Optix Studio Runtime provides a development environment for creating and testing HMI projects before deploying them to the device. The version number is important to ensure compatibility between the project and the runtime environment and can be useful for troubleshooting issues that are related to project development and deployment.

Load application from USB

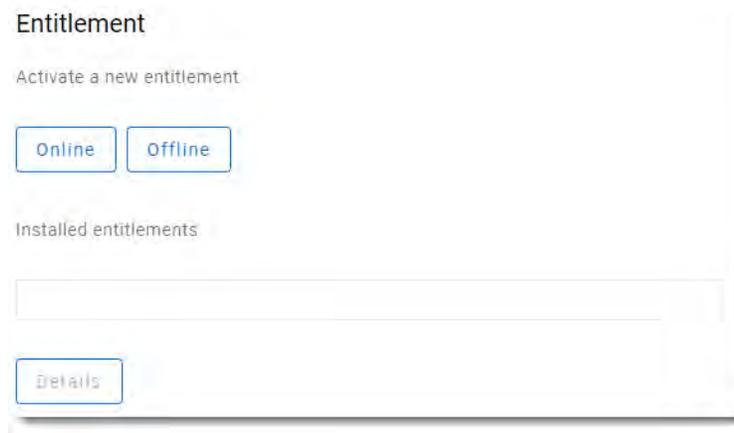
Select Load to load a FactoryTalk Optix application from the USB device that is connected to the module.

Delete current application

Select Delete to delete the FactoryTalk Optix application that is loaded on the module.

Entitlement

You can activate a new entitlement online or offline.



Activate a new entitlement

The Activate a New entitlement section provides two options for activating an entitlement upgrade on the device: Online and Off line.

Online

- Insert the entitlement key: insert here your entitlement key when the device has the access to the Internet. A pop-up with the activation confirmation (or a description of the error that occurred) appears.

Offline

- Export an entitlement activation request for this device to a file: export a .req file that can be used to activate the entitlement using the Entitlement Manager on an operator panel that is connected to the internet. After activating the entitlement, an entitlement .lic file is generated and is required to complete the offline entitlement activation on the device.
- Install an already activated entitlement file into this device: import the .lic file generated via Entitlement Manager to install the entitlement on the device. The System Manager browses files searching for a .lic file to install, and a pop-up confirms the activation or indicates any errors that occurred during the process.

Installed entitlements

Installed entitlements show the already present entitlements. Select Details to see all of the entitlement details.

Interfaces

You can set the device interfaces.

IMPORTANT The FactoryTalk Optix RA EtherNet/IP™ driver only runs on Port 2 (Eth2). Only Port 2 can be used for EtherNet/IP communication. This Ethernet port can communicate on an EtherNet/IP network at a maximum network communication speed of 1 Gbps.

Eth1: WAN

Enable

You can enable and disable the Eth1 (WAN) port (Port 1 on the module).

MAC Address

The MAC address section displays the unique identifier for Port 1 of the module. This address is essential for network communication and device identification purposes.

Obtain IP configuration automatically

The option for the Eth1 (WAN) port allows the device to obtain an IP address, subnet mask, default gateway, and DNS server address from a DHCP server on the network. When enabled, the device will continuously broadcast a DHCP request and receive an IP configuration from the DHCP server, ensuring that the device is always properly configured for network communication. In case you need to specify a fixed IP, simply unmark the check box and fill in the form below.



If the WAN port is configured in DHCP and the DHCP server must provide updated parameters compared to the current ones, a restart is required so that these parameters can be recovered and used correctly.

Eth2: LAN

MAC Address

The MAC address section displays the unique identifier for Port 2 of the module. This address is essential for network communication and device identification purposes.

Obtain IP configuration automatically

The Obtain IP configuration automatically checkbox option for Port 2 (LAN) port enables the automatic acquisition of an IP address, subnet mask, and default gateway from a DHCP server on the local network.

More common for the LAN interface is to use a fixed IP and, in this case, unselect the checkbox, specify the IP with the mask, and click the Add button. The IP is added to the list.

Networking

In this section, it is possible to choose which networks are reachable when establishing a VPN through FactoryTalk Remote Access.

VPN

VPN

Network interfaces

WAN

LAN

Point-to-point virtual ethernet adapter

Reserve static IP pool for VPN connections

List of reserved static IP pool

Add Remove

Network interfaces

- **WAN:** Select this option to be able to reach via VPN the devices on the subnet of the Eth2 port.
- **LAN:** Select this option to be able to reach via VPN the devices on the subnet of the Eth1 port.
- **Point-to-point virtual Ethernet adapter:** Select this option to be able to reach via VPN the device only.
- **Reserve static IP pool for VPN connections:** By enabling this option, it becomes possible to define one or more IP pools that are used to dynamically assign the IP address to the remote PC where the FactoryTalk Remote Access tools are running.

FT Remote Access

Options for connecting the device to a FactoryTalk Remote Access organization.

Connection

The Connect/Disconnect button lets you manage the connection/disconnection of the device to/from the FactoryTalk Remote Access Network. By pressing Connect, if the device has never been registered to a FactoryTalk Remote Access domain, the ID and Password will appear to be used for the registration.

The only way to unregister a device from its FactoryTalk Remote Access organization is to delete the device from the FactoryTalk Remote Access manager. Then the ID and Password will reappear to be used for a new registration.

Connection

Status
Disconnected from the FT Remote Access infrastructure

Connect

Configuration

This section outlines the configuration parameters that are required for establishing a connection to a FactoryTalk Remote Access organization.

The screenshot shows a configuration window titled "Configuration". It has three main sections:

- Availability mode:** Contains two radio button options. "Always on" is unchecked, and "Reconnect to server on reboot if left connected" is checked.
- Connection port:** A dropdown menu currently showing "Auto".
- Server:** A dropdown menu currently showing "Public".
- Proxy configuration:** A dropdown menu currently showing "None".

Availability mode

Always on: Keeps a non-stop link with FactoryTalk Remote Access services.

Reconnect to server on reboot if left connected: If turned on, this option reconnects to the server automatically after restarting the device, if it was connected before.

Connection port

Select the appropriate port for connecting to the FactoryTalk Remote Access organization's servers. The available options include Auto (automatic selection), 80, 443, or 5935.

Server

Determine whether the FactoryTalk Remote Access Network to which the device should connect is Public or Private. Public means that the device will be connected to the network infrastructure hosted by Rockwell Automation.

Proxy configuration

Configure the connection parameters for the FactoryTalk Remote Access organization if a proxy is required. The available options for proxy types are: None (no proxy), SOCKS5, and HTTP. Choose the option that best aligns with your network requirements and security policies.

Users

Accounts

This section allows you to:

- Change the password for the Username selected
- Enable the User account
- Change the password for the Username selected
- Set the security policy

IMPORTANT

Passwords for both Admin and User accounts must meet the following requirements:

- must be at least 8 characters long.
 - must meet additionally at least 3 of the following requirements:
 - at least one uppercase character.
 - at least one lowercase character.
 - at least one numeric character.
 - at least a symbolic character.
-

Enable the User account

After the first configuration of the device, you can enable the account called user by selecting it from the menu Username and assigning a password.

The password assigned to this account can then be replaced by the end user. If necessary, the admin can reset the user's password at any time by disabling the user account.

The user account can be used to access the System Manager from the device or from the Browser.

Accounts

Select a user and update their password. To activate "user", a password must be assigned

The screenshot shows a web interface for configuring accounts. At the top, there is a heading 'Accounts' and a sub-heading 'Select a user and update their password. To activate "user", a password must be assigned'. Below this, there are three input fields: a dropdown menu for 'Username' with 'admin' selected, a text input field for 'New password', and another text input field for 'Confirm password'.

Security Policies

You can set the time for the Automatic Session time out. This signs you out of System Manager.

Security Policies

The screenshot shows a web interface for configuring security policies. It features a heading 'Security Policies' and a text input field labeled 'Automatic session lock (minutes)' with the value '15' entered.

Diagnostic

The Diagnostic section provides tools for troubleshooting and identifying issues with the device. This section includes two options: Ping and Export Diagnostic Logs.

Ping

The ping option allows you to run the ping command to an IP address specified in the Network address box. This tool tests network connectivity and can help identify issues with network communication. The result of the ping command will be the log file SystemManager_log_*.txt available in the Export logs section.

Ping

Five ping requests will be sent to the provided network address. The result will be available in the device log

Network address

ex. 10.0.2.1 or www.example.com

Ping

Export Logs

The Export all option allows you to download files containing activity logs. These logs provide valuable information for diagnosing issues and identifying the root cause of problems with the device. It is possible to download a file containing logs that can be reviewed and analyzed for troubleshooting purposes.



Depending on the network condition, the download can fail at the first attempt. Refresh the webpage and try again.

Logs

Export all

Notes:

Remote Access

You can configure the ControlLogix® Embedded Edge Compute module to use FactoryTalk® Remote Access™ to transfer a FactoryTalk® Optix™ application to the module, update the module image, and connect to a Logix Controller remotely.

You access FactoryTalk Remote Access through FactoryTalk® Hub™.

FactoryTalk Hub

To use FactoryTalk Hub, either create an organization or join an existing organization. The organization that you belong to controls the services available to you in FactoryTalk Hub.

Authentication

FactoryTalk Hub uses your myRockwell user profile to authenticate your access and determine your organization. You can be a member of multiple organizations.

After your account has been authenticated, your browser will display the FactoryTalk Hub Home screen. Panels are displayed that identify the services entitled for your use.

The organizational administrator can use the Portal Menu to add an entitlement, manage the FactoryTalk Hub subscription, define resources, create user profiles, and invite additional users to the organization.



If the link isn't visible, you are not logged in as an organizational administrator.

Open a Service

To open a service:

1. Click the panel for the service, such as FactoryTalk Optix or FactoryTalk Remote Access.
2. To return to the Home screen, click Home.

Each service has a Getting Started section and Help to assist you in learning how to perform different tasks.

Verify account

Before you can sign in, your account must be verified. Make sure that the information provided is accurate to receive your verification code. Account verification is automated and occurs within 5 minutes of completion of the service sign-up.



Verification emails come from the sender myrockwell.com. If you have not received the verification email, check your junk or spam folders for the email.

Add the Module to FactoryTalk Remote Access

To register the module in a FactoryTalk Remote Access organization:



See the FactoryTalk Remote Access Help for additional information on how to get access to FactoryTalk Remote Access Manager and how to register a device in an organization.

1. Sign on to System Manager.
2. On the Networking page:
 - a. Unselect WAN, LAN, and Reserve static IP pool for VPN connections.
 - a. Select Point-to-Point Virtual Ethernet adapter.
3. Press Apply. The module reboots.
4. Sign on to System Manager.
5. On the FactoryTalk Remote Access page:
 - a. In Connection, press Connect.
 - b. Note the Device ID and Password.
6. Navigate to FactoryTalk Hub, and make sure you have joined the correct organization.
7. Select the FactoryTalk Remote Access Tile.
8. Create a folder under the Organization.
9. Right-click and select Add a device.
10. Select Add the device remotely.
11. Use the DeviceID and Password from the Embedded Edge Compute module.
12. Once connected, you can give it a name.
13. Navigate through the properties.

Update the Module With FactoryTalk Remote Access

You can update the module remotely by transferring the firmware image through FactoryTalk Remote Access.



This procedure requires that the device has been registered within a FactoryTalk Remote Access organization.

IMPORTANT The process takes approximately 2 minutes to complete. During this time, it is important NOT to turn off the device or remove power.

To update the module:

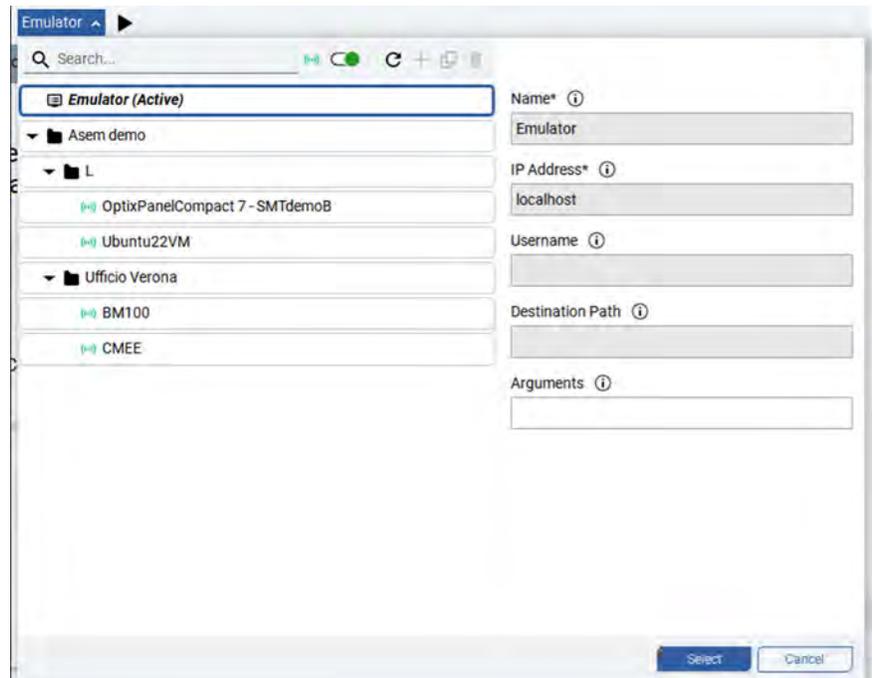
1. Using the FactoryTalk Remote Access manager web interface:
 - a. Select the device from the Domain view.
 - b. Select Device Access.
 - c. Select Advanced mode.
2. When the FactoryTalk Remote Access Tools window opens, select the Explorer tab on the left menu and copy the firmware image from the local system to this folder on the Embedded Edge Compute module: `\persistent\data\Updates`.
3. After copying is complete, restart the device by using the Restart button available in the left menu of the FactoryTalk Remote Access Tools window.
4. The device reboots.
5. After reboot, the OK status indicator flashes red and "UPDATE IN PROGRESS" scrolls on the 4-Character display.

Depending on the result of the update:

- Update failure: the OK status indicator is steady red and error message "UPDATE FAILED" scrolls across the 4-Character display.
- Update OK: the OK status indicator is steady green, "UPDATE OK" scrolls across the 4-Character display, and then the module reboots.

Deploy a FactoryTalk Optix Application With FactoryTalk Remote Access

When you use FactoryTalk Optix Studio while you are signed on to a FactoryTalk Hub organization with the FactoryTalk Remote Access domain, you can connect to remote devices directly from FT Optix Studio to deploy a FactoryTalk Optix application.



Notes:

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

Documentation Feedback

Your comments help us serve your documentation needs better. If you have any suggestions on how to improve our content, complete the form at rok.auto/docfeedback.

Waste Electrical and Electronic Equipment (WEEE)



At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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